

ABSTRACT

Fast silicon photodiodes with high back surface reflectance in a wavelength range close to the bandgap, and methods of fabrication of such photodiodes. The photodiodes have a patterned oxide or nitride layer on the back surface covered by a metal layer that makes electrical contact with the substrate in a pattern complimentary to the pattern of the oxide or nitride layer. This provided high reflectivity over a large percentage of the back surface, while at the same time providing excellent electrical contact to the back surface.